

CASE REPORT

TRIFURCATION OF POSTERIOR DIVISION OF INTERNAL ILIAC ARTERY: A CASE REPORT

Sunitha Vinnakota¹, N. Bhimai Devi²

HOW TO CITE THIS ARTICLE:

Sunitha Vinnakota, N. Bhimai Devi. "Trifurcation of Posterior Division of Internal Iliac Artery: A Case Report". Journal of Evidence Based Medicine and Healthcare 2014; Volume 1, Issue 1, January-March; Page: 1-4.

ABSTRACT: Internal Iliac Artery has a large territory of distribution like all pelvic viscera, Gluteal region and the posterior & antero medial compartments of thigh through its visceral and parietal branches. The rare variation in the branching pattern of posterior division of Internal Iliac Artery was noted during routine cadaveric dissection of pelvic region for first year medical undergraduates in a 60 year old male cadaver. Knowledge of the variations of Internal Iliac Artery may be of use to the radiologists and also to the surgeons to avoid accidental hemorrhage during pelvic surgeries.

KEYWORDS: Posterior division, Inferior Gluteal Artery, Internal Pudendal Artery.

INTRODUCTION: Internal Iliac Artery one of the terminal branches of Common Iliac Artery, extends from the lumbo-sacral inter vertebral disc to the superior margin of greater sciatic foramen^[1, 2] During its course, it descends anterior to the sacro-iliac joint & divides into anterior & posterior trunks. The posterior trunk passes posterior to the greater sciatic foramen and gives off ilio-lumbar and, lateral sacral arteries and continued as Superior Gluteal Artery. Variations in the branching pattern of Internal Iliac Artery are common & reported by various authors. Inferior Gluteal Artery usually arises from the anterior division and passes below the ventral ramus of S1, then between piriformis and coccygeus and enters the Gluteal region through greater sciatic foramen. The origin of Inferior Gluteal Artery along with Superior Gluteal Artery from the trunk of Internal Iliac Artery is also common, but from the posterior division of Internal Iliac Artery was rare.^[3] In the present case the variant trifurcation of posterior division was noted. Inferior Gluteal Artery instead of taking origin from anterior division, arose as a branch of posterior division along with Obturator Artery & Ilio Lumbar Artery.

CASE REPORT: During regular dissection classes of pelvic region for first year medical undergraduates revealed the variant trifurcation of posterior division of Internal Iliac Artery in a 60 year old male cadaver. The posterior division of Internal Iliac Artery immediately at its origin trifurcated into 1) Lateral Sacral Artery, 2) Superior Gluteal Artery & 3) a common trunk, which further sub divided into Ilio-lumbar, Obturator & Inferior Gluteal Artery (Figures 1, 2).

- 1) Lateral Sacral Artery sprouted as 2 small branches from posterior division.
- 2) Superior Gluteal Artery bent towards the greater sciatic foramen and exited into the Gluteal region by passing above the superior margin of pyriformis.
- 3) The third branch gave rise to Ilio-lumbar, Obturator and continued as Inferior Gluteal Artery (Figures 2, 3). Except continuation of anterior division as Internal Pudendal Artery

CASE REPORT

through greater sciatic foramen, no other variation was noted in its origin and course (Figures 1, 3).

DISCUSSION: The first attempt made by Jastschinski 1891^[4] in Polish subjects to classify the variations in the origin of parietal branches into three categories as a) large caliber vessels (Superior Gluteal, Inferior Gluteal & Internal Pudendal arteries) b) Medium caliber vessels (Obturator Artery) and c) Small caliber vessels (Ilio-lumbar and Lateral Sacral Arteries). Jastschinski^[4] 1891 found that only the arteries in the first group showed regularity in their origin and classified the variations into four types. Adachi (1928)^[5] modified this method by adding a fifth type of variation and includes certain sub types, in a study of Internal Iliac Artery and its branches in Japanese subjects. Lipshutz (1918),^[6] Ashley & Anson (1941)^[7] employed the Umbilical Artery in addition to the three large parietal trunks for typing and the Obturator Artery for subtyping the Internal Iliac Artery variations. Braithwaite^[8] conducted study of Internal Iliac Artery variations in British subjects and he noted that the Obturator Artery was given off by Inferior Gluteal Artery very rarely (4.7% of cases in 169 pelvic halves.). Murli Manju et al^[9] in their study found type II a in 4 (6.6%) cases. Sateesha Nayak B et al^[10] mentioned the absence of Inferior Gluteal Artery and the origin of Internal Pudendal Artery from the posterior division of Internal Iliac Artery in their case report. The present case was a rare variant of type II a of Adachi's classification. In this type the Superior Gluteal Artery and Inferior Gluteal arteries arise by a common trunk and Internal Pudendal Artery arises separately. In the present case, even though the Superior Gluteal and Inferior Gluteal arteries had a common origin from posterior division, Ilio-lumbar and Obturator Artery spring from a common trunk which continued as Inferior Gluteal Artery. As per the previous observations, during the development, the most appropriate channels enlarge and the others get retracted or disappear, which will result in the final arterial pattern.^[11]

REFERENCES:

1. Williams PL, Bannister LH, Berry MM, Collins P, Dyson M, Dussek JE, Ferguson MWJ. Gray's Anatomy. The anatomical basis of medicine and surgery, 38th ed. Edinburgh; Churchill Livingstone; 1995. p. 1560.
2. Snell RS. Clinical anatomy for students, 6th ed. Philadelphia; Lippincott, William & Wilkins; 2000. p. 292–93.
3. Bergman RA, Thompson SA, Afifi AK, Saadeh FA. Compendium of human anatomic variations. Munich: Urban and Schwarzenberg; 1988. p. 84.
4. Jastchinski S. Die Tyischen Verzweigsform der Arteria Hypogastrica. Int Mschr ssssAnat Physiol. 1891a;8:111-127.
5. Adachi B. Das Arteriensystem der Japaner, Bd. II. Kyoto. Supp. to Acta Scholae Medicinalis Universitatis Imperialis in Kioto 1928;9:1926-1927.
6. Lipshutz B. A composite study of the Hypogastric Artery and its branches. Ann Surg. 1918;67: 584- 608.
7. Ashley FL and Anson BJ. Hypogastric Artery in Ametical Whites and Negroes. Am J Phys Anthropol. 1941;28: 381-395.

CASE REPORT

- Braithwaite JL. Variations in origin of the parietal branches of the Internal Iliac Artery. *J Anat.* 1952;86:423-430.
- Murli manju et al. Morphological analysis of human internal Iliac Artery in South Indian Population. *Online journal of Health & Allied Sciences* Vol 10 issue 1 Jan-Mar 2011.
- Sateesha Nayak B et al. Variations in the branching pattern of the Internal Iliac Artery in an adult male- A Case report. *Rev Arg de Anat Clin*:2012, 4 (1):25-28.
- Fitzgerald MJT. *Human Embryology*, New York; Harper International; 1978. p. 38–56.

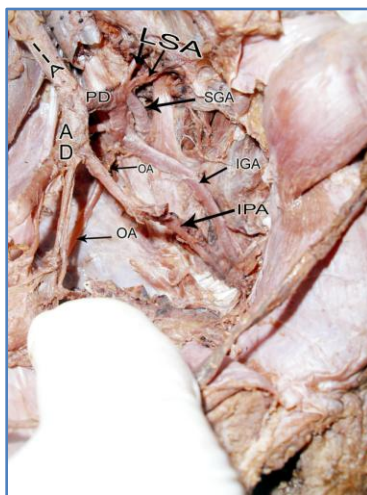


Fig. 1: Shows the branches of both anterior and posterior divisions of Internal iliac artery

(IIA: Internal Iliac Artery, AD: anterior division of Internal Iliac Artery, PD: posterior division of Internal Iliac Artery, LSA: Lateral sacral Artery, SGA: Superior Gluteal Artery, IGA: Inferior Gluteal Artery, IPA; Internal Pudendal Artery, OA: Obturator Artery)

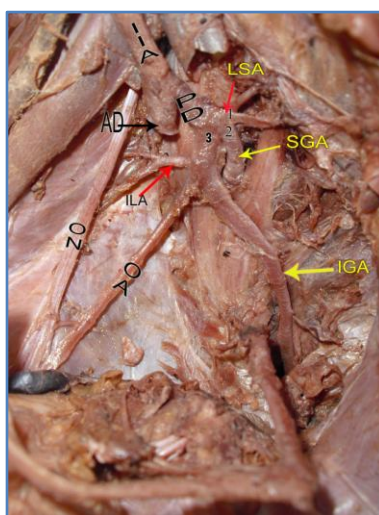


Fig. 2: Shows the branches of posterior divisions of Internal iliac artery

CASE REPORT

(IIA: Internal Iliac Artery, AD: cut end of anterior division of Internal Iliac Artery, PD: posterior division of Internal Iliac Artery, LSA: Lateral sacral Artery, SGA: Superior Gluteal Artery, IGA: Inferior Gluteal Artery, IPA; Internal Pudendal Artery, OA: Obturator Artery, ON: Obturator nerve, ILA: Ilio-lumbar Artery)

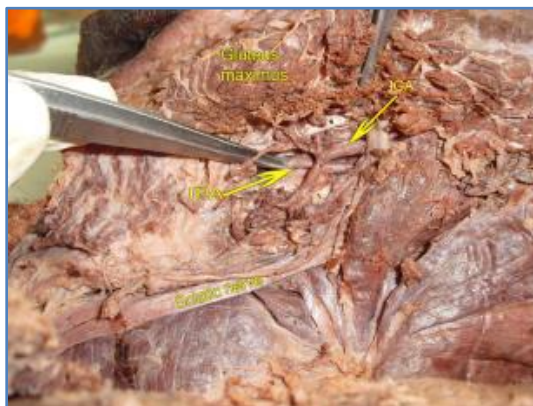


Fig. 3: Shows the Inferior gluteal artery & Internal pudendal artery under Gluteus maximus muscle

(IGA: Inferior Gluteal Artery, IPA: Internal Pudendal Artery)

AUTHORS:

1. Sunitha Vinnakota
2. N. Bhimai Devi

PARTICULARS OF CONTRIBUTORS:

1. Professor and HOD, Department of Anatomy, Maharajah's Institute of Medical Sciences, Nellimarla, Vizianagaram Dist.,
2. Professor, Department of Anatomy, Maharajah's Institute of Medical Sciences, Nellimarla, Vizianagaram Dist.,

NAME ADDRESS EMAIL ID OF THE CORRESPONDING AUTHOR:

Dr. Sunitha Vinnakota,
Professor and HOD of Anatomy,
MIMS, Nellimarla,
Vizianagaram Dist., A.P.
E-mail: laksaca@gmail.com

Date of Submission: 01/04/2014.
Date of Peer Review: 02/04/2014.
Date of Acceptance: 12/04/2014.
Date of Publishing: 18/04/2014.